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1. Based on my experience on various railroads all railroad ties were wood rather than concrete or steel. Oak was preferred because it could be used without treatment. However, about 90% of railroad ties were pine.
2. About 50% of railroad ties were treated with creosote and 50% with zinc chloride. The latter treatment was not as good as creosote, but was considerably cheaper.
3. Creosote treated ties were used on the main roads and ties treated with zinc chloride were used on secondary roads and spur tracks.
4. Ties were not pre-bored to reduce damage from driving spikes nor were they pre-adzed for tie plates.
5. One exception to the statement concerning treatment of ties was the section of the Trans-Siberian Railroad from Vladivostok to the Ural Mountains. At the time I was on the road there was not a single treated railroad tie in use. The ties were cut in the winter, dried out in the summer and laid in the fall.
6. The average life of an untreated railroad tie was four years, and of a treated tie from eight to 15 years.
7. There were two procedures of tie replacement. One was partial replacement, where ties would be replaced on an individual basis. Generally from 5% to 6% of railroad ties would rot sooner than figures listed, as far as average life is concerned, and these would be replaced on an individual basis.
8. The second type of replacement was capital replacement, in which all ties over a stretch of several miles of road would be replaced at once. In this connection ties which were still in good shape would subsequently be used in secondary lines and on sidings.

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- There were two different grades of ties, one of which was known as the first category. This type was used on roads where heavy loads were standard practice and where the heaviest locomotives were used. Such roads would probably be hauling coal, iron ore, and other bulk products of heavy nature.
10. The second category of ties was used on roads which had lighter locomotives and less heavy traffic.
 11. As the number of ties in use, there were approximately 15 hundred ties per kilometer on main roads and 12 hundred ties per kilometer on secondary roads.
 12. On sidings, salvaged ties accumulated from the capital replacement program would be used. A maximum of 12 hundred second category ties would be used per kilometer.
 13. As concerns rails, there were five different types ranging from 18 pounds per foot to 32 pounds per foot in weight.
 14. The 32-pound rail is used only on main trunk roads with very heavy traffic. There were probably not more than a thousand miles total of railroad in the USSR at the time I was connected with the railroad system which utilized 32-pound rails.
 15. The 28-pound rail was used where heavy locomotives were in use and heavy bulk freight was transported.
 16. The 20 - 24-pound rail was used for comparatively light traffic. For example, the Trans-Siberian Railroad from Vladivostok to the Ural Mountains used 20 - 24-pound rails.
 17. The 18-pound rail was used on sidings, spur tracks, etc.
 18. The length of the rails ran from a minimum of 21 ft to 35 ft length maximum. I believe that the average would be about 28 ft.
 19. Rails generally were not changed because of life expectancy, but primarily because heavier locomotives were assigned to roads and heavier rails were required. The used rails would then be put on secondary lines or on spur tracks.
 20. There was some slight replacement of rails due to defects, such as rails breaking because of frost or defective materials, but fundamentally this amounted to very little. Capital replacement of rails would be on about a 10 - 15 year basis if not changed before.
 21. I built one stretch of railroad [REDACTED], about five hundred miles [REDACTED] with all 18-pound rails because they were the only type of rail available and we [REDACTED] to finish the line.
 22. I also built a spur line [REDACTED] in which we used all old rails.
 23. As far as I know, no re-rolled rails were used.
 24. The annual replacement program for rails might approximate 5 - 10% per year. However, fundamentally, the rails were replaced on partial and capital replacement programs as explained earlier.
 25. Regarding fuel, all of the roads with which I was familiar used wood burning locomotives and I believe that use of wood as a fuel is still prevalent in many areas in the USSR because of the great woodlands and the extremely cheap labor available.

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26. As concerns man power, a rule of thumb might be that 1 - 1 1/2 men per kilometer would be required for operating and maintenance, but if all employees of a given railroad line were taken into consideration, it would be about 1 1/2 to 2 men per kilometer. However, this figure would increase considerably in the winter as local help would be recruited to clear the tracks, etc.
27. Man power on a typical passenger train would consist of three men in the locomotive; the engineer, fireman, a helper; four to five brakemen; a conductor, and a baggage car man.
28. On a freight train there would be three men in the locomotive, but the number of brakemen would vary with the length of the train.
29. At the time I was working on the railroads in the USSR there was practically no such thing as a continuous airbrake and the majority of the cars did not even have hand brakes. Consequently, trains would be arranged so that about every 5th car would be equipped with a hand brake and one brakeman would be assigned to that car.
30. This would mean that there would be from five to 10 brakemen per freight train on an average.
31. At the time I was in the Soviet Union railroad personnel were working a five day week, eight hours per day, but this has undoubtedly changed in the interim.
32. Time required for making repairs would, of course, vary with the work to be done. Small repairs, such as changing journal boxes, bearings, boring cylinders, etc would probably average about two thousand hours. Large repairs, such as replacing fire boxes, changing boilers, etc would depend completely upon the equipment available for the job, such as cranes, etc. However, it would probably require at least five thousand man hours for a major repair.
33. As far as the life of a locomotive in the USSR is concerned, it would probably average about 20 years. However, as new and heavier locomotives were ordered into service, older locomotives would be put on secondary lines and finally relegated to switching duty.
34. Average life of freight cars would be 15 - 20 years at the maximum.
35. Locomotives were repaired every 10 - 20 thousand kilometers. Freight cars would be checked and repaired after the same amount of service.

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755.21	N
755.223	N
755.35	N
755.61	N
755.34	N
755.33	N

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